# EXPERIMENTAL RESEARCHES

IN

# KINEMATICS;

DESIGNED TO EXEMPLIFY AND ELUCIDATE

# THE LAWS OF MOTION,

BY THE

ORGANICAL DEVELOPMENT OF THEIR

REPRESENTATIVE, OR CHARACTERISTIC CURVES,

THE RESULTANTS OF COMBINATIONS OF MOVEMENTS.

BY

HENRY PERIGAL, JUNIOR, ESQ.

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LONDON: 1838—1842.

THE accompanying Curves were produced and engraved entirely by Machinery.

In order to exemplify and elucidate the LAWS OF MOTION by the organical development of their REPRESENTATIVE OR CHARACTERISTIC CURVES, *the resultants of combinations of movements*, my Apparatus has been adapted to engrave its own illustrations: and the following Specimens are selections from an extensive series of MOTIONAL CURVES delineated during the progress of Experimental Researches in Kinematics.

KINEMATIC CURVES and DYNAMIC CURVES are terms applied to *Curves that result from Motion;* indicating their connexion with DYNAMICS and KINEMATICS, *the Sciences which constitute the "Doctrine of Motion:"*—to distinguish them from the Ideal Curves said to be generated by points supposed to move according to Hypothetical Laws, *without any adequate cause for their conformity thereto; or when there are not any known means of carrying the Laws into effect; or there is no other proof that the assumed Laws are not purely ideal, and such Curves mere hypothetical effects of imaginary causes:*—as well as in contradistinction to Algebraic Curves representing the Geometric Loci of Equations; *which express the limits of extension or magnitude, not the path of motion; defining a boundary line, not describing an orbit:*—in short, to distinguish them from all Curves that are not MOTIONAL; *or are not proved to be the Resultants of some of the modifications of motion.*

*London*, 31*st March*, 1842.

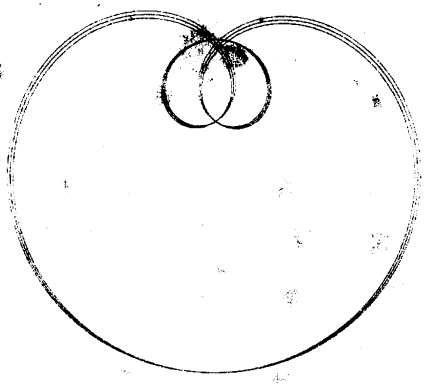
983891

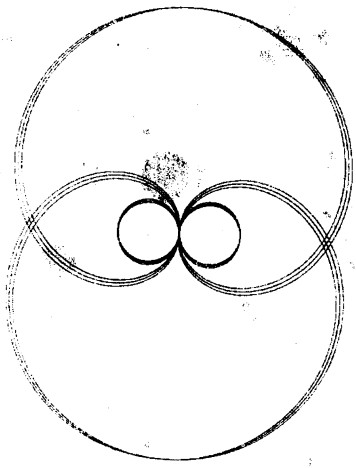
# KINEMATIC CURVES.

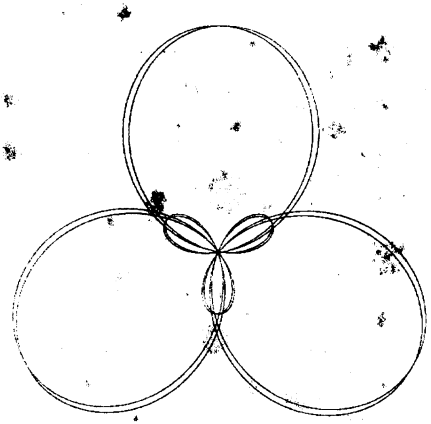
THE following Specimens are produced by the combination of a Right-Line Movement with one Circular Motion; consequently they are all

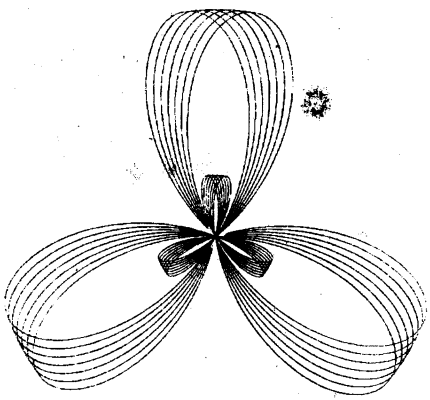
## SPIROEIDS OF ONE CURVATURE.

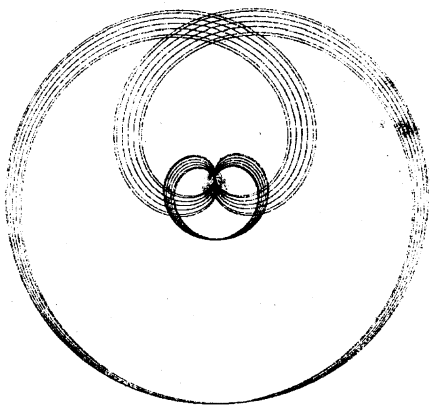
SPIROEIDS are *periodic* Curves which progress in coils or circumvolutions. Some are *interminate*, or of unlimited extension. Others are *finite*, and "*return into themselves*" at the termination of their respective *cycles:* either reiterating the same path always in the same direction, and describing a continuous line; or periodically advancing and retrograding, always in the same path, but alternately in contrary directions: these may be termed *Iteroids* and *Retroids.*

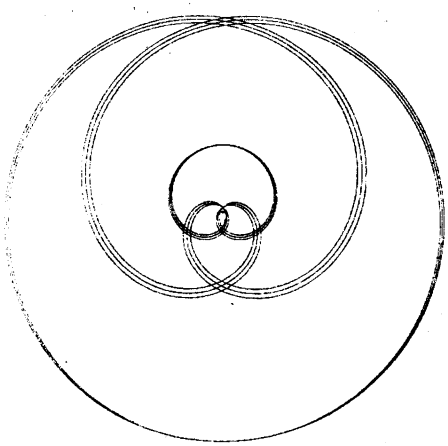


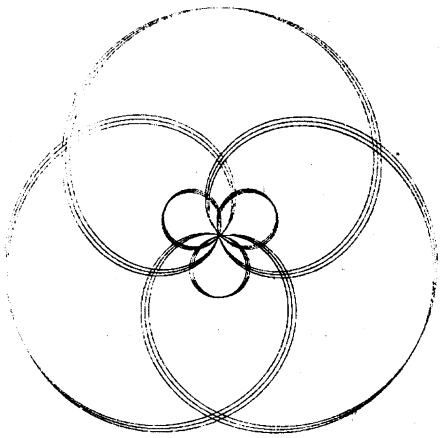


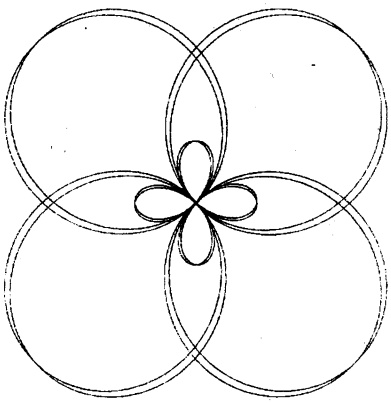










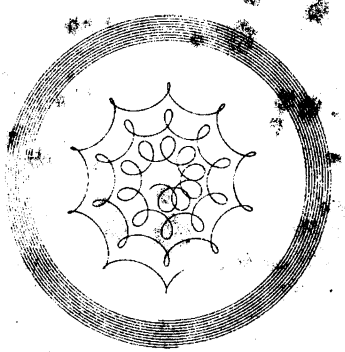


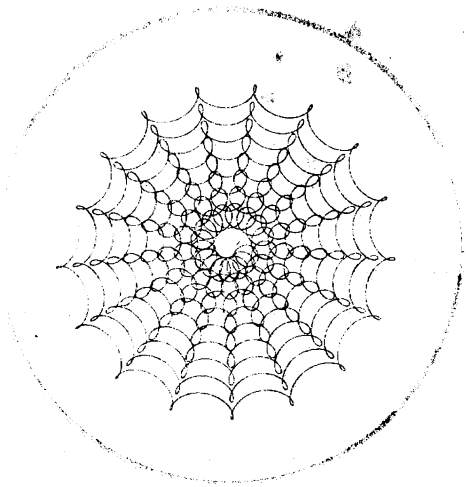
# KINEMATIC CURVES.

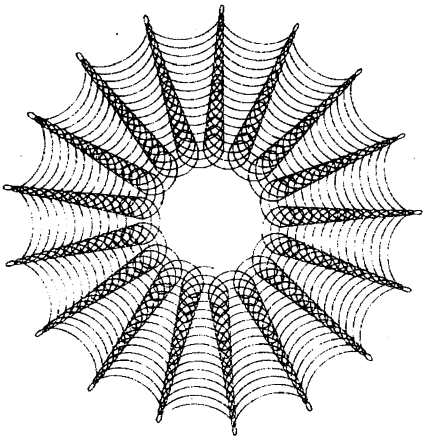
THE following Specimens are produced by the combination of a Right-Line Movement with two Circular Motions; consequently they are all

## SPIROEIDS OF TWO CURVATURES.

SPIROEIDS are *periodic* Curves which progress in coils or circumvolutions. Some are *interminate*, or of unlimited extension. Others are *finite*, and "*return into themselves*" at the termination of their respective *cycles:* either reiterating the same path always in the same direction, and describing a continuous line; or periodically advancing and retrograding, always in the same path, but alternately in contrary directions: these may be termed *Iteroids* and *Retroids*.







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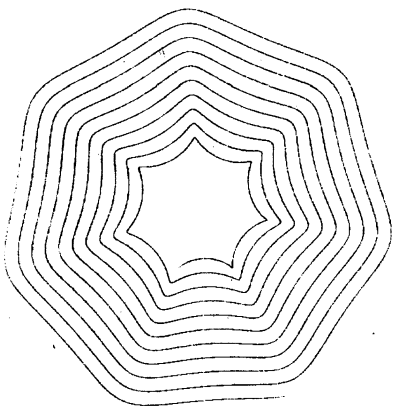

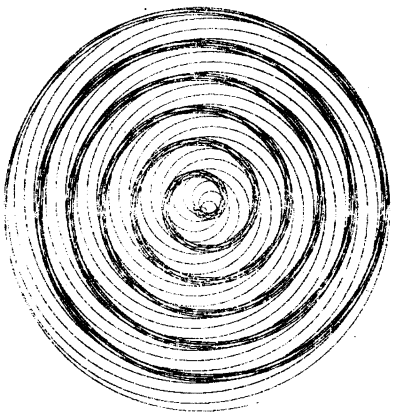

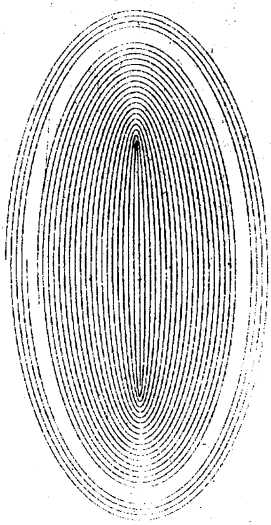

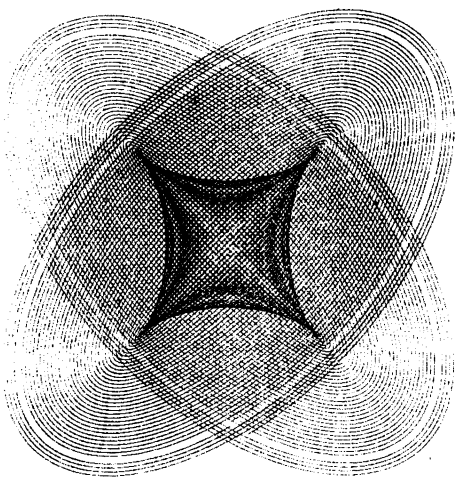

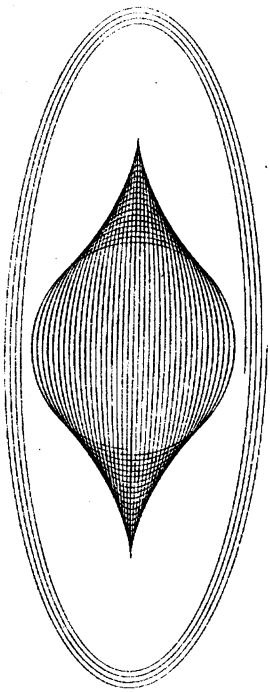

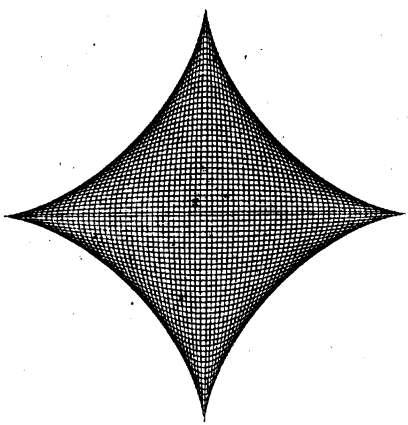

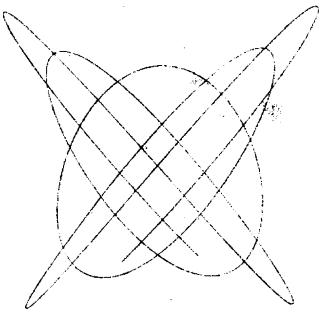

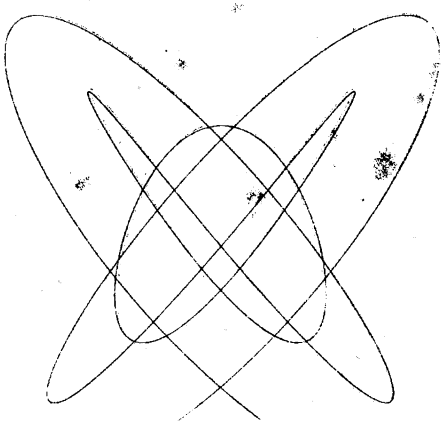

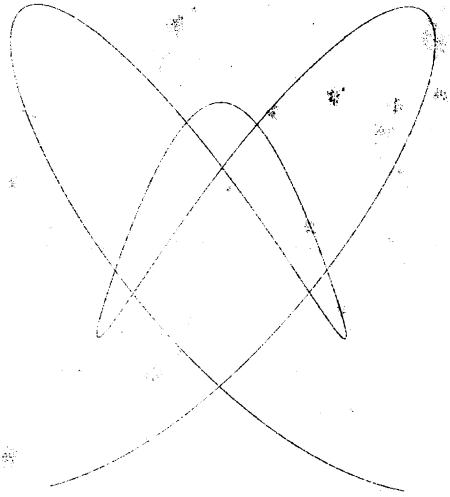

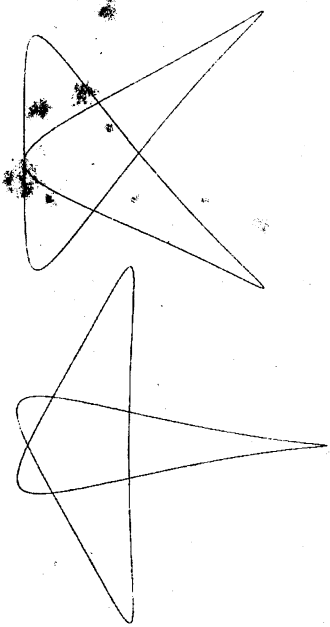

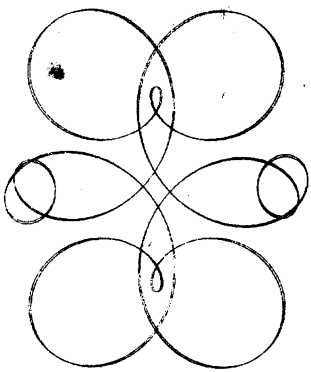

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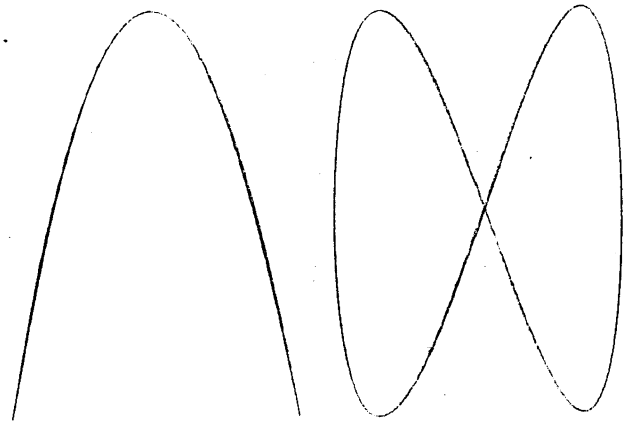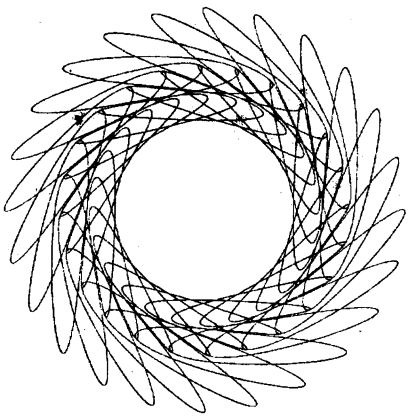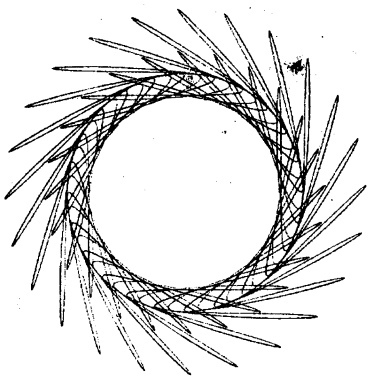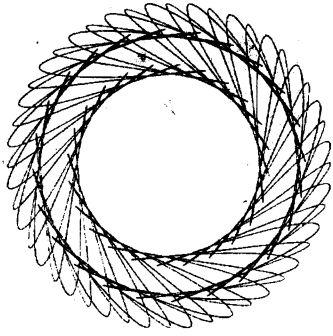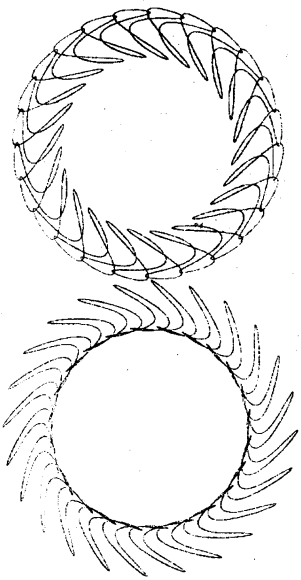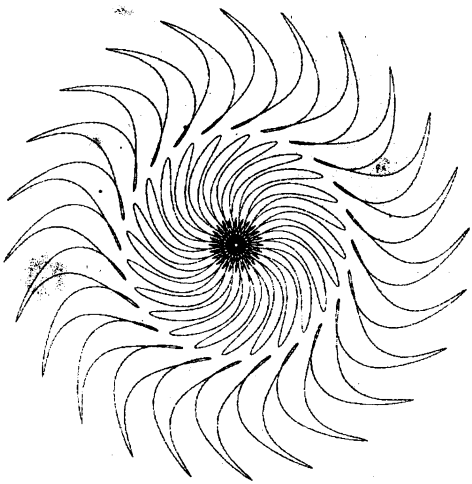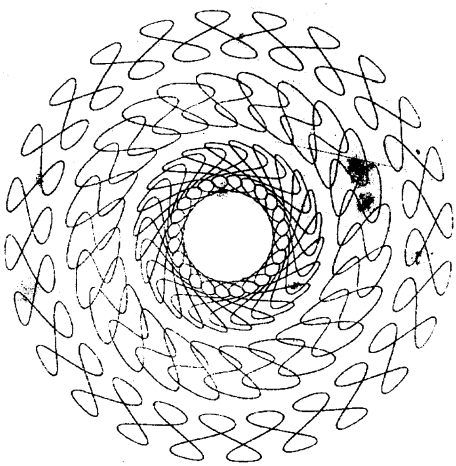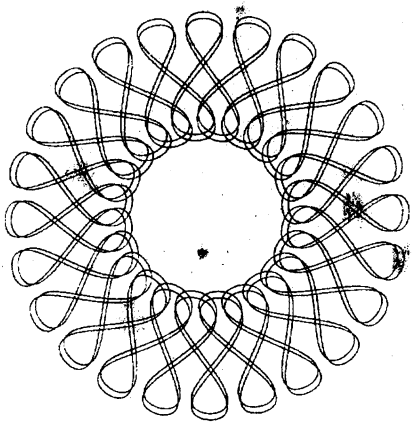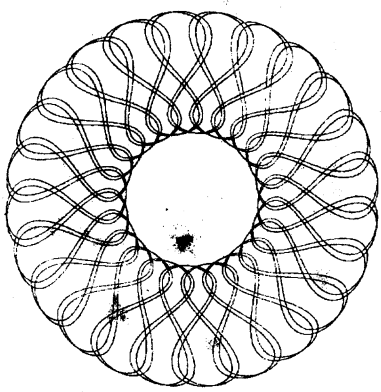
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